

Alabama.—Auburn, 12th, 21st; New Market, 13th, 14th, 21st, 22d, 24th, 25th.

Arkansas.—Eureka Springs, 13th; Lead Hill, 13th, 21st.

California.—Georgetown, 6th; Riverside, 5th; Sacramento, 1st, 5th, 7th, 26th; Willows, 1st, 2d.

Florida.—Archer, 15th.

Georgia.—Athens, 21st, 25th; Atlanta, 21st; Forsyth, 21st, 22d, 25th, 26th.

North Carolina.—Charlotte and Raleigh, 21st, 24th to 26th; Flat Rock, 25th, 26th; Lenoir, 13th, 14th, 24th, 25th; Statesville, 21st, 24th to 26th; Wash Woods, 17th, 26th; Weldon, 9th, 17th, 21st, 24th to 27th.

South Carolina.—Cedar Springs, 21st, 25th to 27th; Stateburg, 21st, 25th, 26th.

Tennessee.—Ashwood and Milan, 13th, 21st, 25th; Memphis, 21st; Nashville, 13th, 21st.

Texas.—Cleburne, Decatur, and Silver Falls, 30th.

Table of comparative maximum and minimum temperatures for April.

State or Territory.	Stations.	For 1888.		Since establishment of station.				Length of record.
		Max.	Min.	Max.	Year.	Min.	Year.	
Alabama.....	Mobile.....	84.0	50.0	90.0	1883	32.0	1881	18
Do.....	Montgomery.....	86.6	44.0	90.0	1880	30.0	1881	16
Arizona.....	Prescott.....	78.5	31.3	86.0	1879	13.0	1878	12
Do.....	Fort Apache.....	83.0	30.0	89.0	1879	15.0	1883	10
Arkansas.....	Fort Smith.....	89.7	41.5	91.3	1887	30.0	1887	6
Do.....	Little Rock.....	86.0	43.0	94.0	1880	28.2	1886	9
California.....	San Francisco.....	87.7	46.0	81.0	1876	40.0	1875	18
Do.....	San Diego.....	93.0	47.0	87.0	1876	39.0	1875	17
Colorado.....	Denver.....	80.6	30.0	83.0	1874	4.0	1876	16
Do.....	Montrose.....	76.0	28.8	83.0	1885	18.5	1886	3
Connecticut.....	New Haven.....	77.5	25.4	83.0	1885	16.0	1874	16
Do.....	New London.....	68.0	25.5	79.4	1881	19.0	1874	17
Dakota.....	Fort Buford.....	82.2	3.5	92.0	1881	7.0	1880	10
Do.....	Yankton.....	84.8	24.2	90.1	1887	3.0	1881	16
Dis. of Columbia.....	Washington City.....	89.0	31.8	90.0	1872	22.5	1875	18
Florida.....	Jacksonville.....	88.0	49.0	91.0	1880	37.0	1881	17
Do.....	Key West.....	82.5	64.5	88.1	1881	61.0	1873, 1881	18
Georgia.....	Atlanta.....	84.3	39.7	88.1	1887	25.0	1881	10
Do.....	Savannah.....	88.1	47.8	89.0	1887	33.0	1881	18
Idaho.....	Boise City.....	88.1	25.0	86.3	1887	17.5	1883	11
Illinois.....	Cairo.....	82.5	40.0	89.0	1872	24.0	1875	17
Do.....	Chicago.....	83.0	30.0	83.0	1873	17.0	1881	16
Indiana.....	Indianapolis.....	83.3	30.9	85.3	1883	19.0	1875	16
Indian Ter.....	Fort Sill.....	92.2	36.5	96.0	1880	26.0	1881	10
Iowa.....	Dubuque.....	81.6	28.5	84.0	1879	13.8	1886	15
Do.....	Des Moines.....	79.6	21.4	89.0	1883	11.0	1881	10
Kansas.....	Dodge City.....	89.8	31.0	92.0	1880	13.0	1881	14
Do.....	Leavenworth.....	87.4	29.5	89.0	1880	13.0	1881	17
Kentucky.....	Louisville.....	84.8	32.5	88.5	1883	21.0	1875	16
Louisiana.....	New Orleans.....	85.0	56.3	86.8	1887	38.0	1881	18
Do.....	Shreveport.....	87.0	46.0	90.2	1887	32.0	1881	16
Maine.....	Eastport.....	55.6	12.9	71.3	1886	2.0	1874	16
Do.....	Portland.....	64.5	15.5	78.0	1881	14.0	1874	17
Maryland.....	Baltimore.....	90.0	32.8	87.8	1886	23.5	1875	16
Massachusetts.....	Boston.....	66.0	20.8	85.0	1872	11.0	1874	18
Michigan.....	Marquette.....	61.8	13.5	81.5	1887	3.0	1875	14
Do.....	Grand Haven.....	74.0	37.6	80.0	1883	9.0	1874	16
Minnesota.....	Saint Vincent.....	77.2	5.8	83.5	1887	14.4	1874	8
Do.....	Saint Paul.....	76.0	22.6	84.2	1887	7.0	1874	16
Mississippi.....	Vicksburg.....	85.0	45.8	92.0	1887	31.0	1881	16
Missouri.....	Saint Louis.....	87.5	34.8	87.5	1883	22.0	1875	18
Montana.....	Ft. Assinaboine.....	80.0	15.1	81.0	1881	7.0	1881	8
Do.....	Helena.....	78.0	27.5	74.0	1887	6.0	1881	9
Nebraska.....	North Platte.....	88.9	26.2	93.2	1887	12.0	1875	14
Do.....	Omaha.....	86.5	28.0	81.1	1880	6.0	1881	16
Nevada.....	Winnemucca.....	83.2	21.0	81.1	1887	17.0	1883	9
New Jersey.....	Atlantic City.....	74.3	30.3	84.0	1887	19.0	1875	15
New Mexico.....	Santa Fe.....	72.5	29.0	84.0	1879	11.0	1875	16
New York.....	Buffalo.....	66.0	21.4	82.6	1883	11.0	1881	16
Do.....	New York City.....	84.2	29.2	84.0	1886	20.0	1874	17
North Carolina.....	Charlotte.....	91.0	38.3	89.3	1887	28.0	1881	18
Do.....	Wilmington.....	87.5	37.3	90.0	1880	28.0	1875	10
Do.....	Cincinnati.....	84.1	33.4	83.9	1872, 1873	18.0	1875	18
Do.....	Sandusky.....	85.1	28.1	83.9	1886	14.0	1881	10
Oregon.....	Portland.....	83.5	32.0	85.0	1880	28.0	1875	17
Do.....	Roseburg.....	83.8	29.0	84.5	1880	27.5	1887	11
Pennsylvania.....	Pittsburg.....	86.0	25.5	89.2	1885	14.0	1875	16
Do.....	Philadelphia.....	90.7	31.0	87.0	1872	17.5	1874	18
Rhode Island.....	Block Island.....	60.0	26.9	69.9	1885	25.0	1881	8
South Carolina.....	Charleston.....	88.0	50.0	87.0	1880	32.0	1881	16
Tennessee.....	Knoxville.....	84.8	35.5	88.7	1887	24.0	1875	18
Do.....	Memphis.....	86.5	43.0	88.0	1883	27.0	1881	16
Texas.....	Brownsville.....	84.1	60.9	97.8	1886	43.0	1881	13
Do.....	Fort Elliott.....	88.0	37.4	96.0	1880	20.0	1881	9

Table of comparative maximum and minimum temperatures, &c.—Cont'd.

State or Territory.	Stations.	For 1888.		Since establishment of station.				Length of record.
		Max.	Min.	Max.	Year.	Min.	Year.	
Utah.....	Salt Lake City.....	80.1	31.1	83.0	1874	19.0	1875	15
Virginia.....	Lynchburg.....	88.9	31.3	91.5	1873	25.0	1881	16
Do.....	Norfolk.....	93.1	32.2	92.0	1871	27.0	1875, 1880	18
Washington.....	Spokane Falls.....	79.9	27.3	86.2	1887	26.0	1887	8
Do.....	Olympia.....	78.8	31.0	82.0	1880	27.2	1887	11
Wisconsin.....	La Crosse.....	74.2	26.0	83.0	1879	10.0	1881	16
Do.....	Milwaukee.....	77.9	27.5	82.0	1871	11.6	1886	18
Wyoming.....	Cheyenne.....	76.3	24.6	80.0	1874	2.0	1875	16

TEMPERATURE OF WATER.

The following table shows the temperature of the sea-water for April, 1888, observed, under conditions as given, at the harbors of the several stations; the monthly range of water temperature; the average depth at which the observations were made, and the mean temperature of the air:

Station.	Temperature at bottom.				Mean temperature of air at the station.	Average depth of water in feet and tenths.
	Max.	Min.	Range.	Monthly mean.		
Canby, Fort, Wash.....	79.2	71.0	8.2	75.4	70.6	8.1
Cedar Keys, Fla.....	68.0	53.5	14.5	64.0	65.6	34.0
Charleston, S. C.....	37.3	33.8	3.5	35.5	36.5	16.0
Eastport, Me.....	76.0	65.4	10.6	73.7	71.2	14.7
Galveston, Tex.....	81.7	73.0	8.7	78.8	75.7	17.1
Key West, Fla.....	47.0	35.0	12.0	40.8	47.9	14.5
New York City.....	73.0	66.5	7.5	71.2	69.9	18.6
Pensacola, Fla.....	40.0	33.8	6.2	36.9	39.2	15.6
Portland, Me.....	58.7	46.0	12.7	53.2	55.0	53.1
Portland, Oregon.....						

* No thermometer at station.

COTTON REGION REPORTS.

In the accompanying table are given for April, 1888, means of the maximum and minimum temperatures, and the average rainfall in the cotton regions, together with normals computed from similar observations of former years.

It will be seen that both the maximum and minimum temperatures were in general above the normal.

The rainfall was largely deficient in all districts, with the exception of the Galveston district, where there was a large excess.

Temperature and rainfall data for the cotton districts, April.

Districts.	Rainfall.			Temperature.									
	Average for April of three preceding years.		Departures.	Maximum.				Minimum.				Extremes for April, 1888.	
	Average for April, 1888.	Departures.		Mean for April of three preceding years.		Mean for April, 1888.		Mean for April of three preceding years.		Mean for April, 1888.		Max.	M in.
				Departures.	Departures.	Departures.	Departures.	Departures.	Departures.				
Inches	Inches	Inches.	°	°	°	°	°	°	°	°	°	°	
New Orleans.	6.05	1.60	- 4.45	79.1	80.6	+	1.5	58.8	58.8	+	0	97	42
Savannah	4.20	0.37	- 3.83	79.7	82.1	+	2.4	58.0	57.5	+	0	92	41
Charleston	3.47	1.11	- 2.36	75.9	79.3	+	3.4	53.3	56.1	+	0	91	37
Atlanta	5.32	1.44	- 3.88	73.7	77.1	+	3.4	51.3	53.2	+	0	93	37
Wilmington . . .	4.00	1.27	- 2.73	71.6	76.0	+	4.4	48.5	49.9	+	0	85	30
Memphis	6.07	3.02	+ 3.05	73.0	75.1	+	2.1	52.0	53.1	+	0	86	38
Galveston	2.67	7.16	+ 4.49	79.0	77.9	+	1.1	55.7	62.2	+	0	86	42
Vicksburg	6.49	1.41	- 5.08	73.7	80.8	+	7.1	55.6	58.5	+	0	88	46
Montgomery . . .	5.76	1.45	- 4.31	77.1	80.5	+	3.4	53.5	56.0	+	0	89	40
Augusta	4.70	0.91	- 3.79	75.3	78.4	+	3.1	52.5	53.7	+	0	91	35
Little Rock . . .	6.06	2.64	- 3.42	74.5	77.3	+	2.8	51.0	54.1	+	0	91	30
Mobile	6.75	1.77	- 4.98	78.6	80.9	+	2.3	55.7	54.5	+	0	92	40

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for April, 1888, as determined from the reports of about one thousand stations, is exhibited on chart iv. In the

table of miscellaneous meteorological data are given, for each Signal Service station, the total precipitation, with the departures from the normal. The figures opposite the names of the

geographical districts in columns for mean temperature, precipitation, and departures from the normal, show respectively the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal, and subtracting when above.

From chart iv it will be seen that the heaviest rainfall of the month occurred in the lower Rio Grande valley and in portions of the central and southern Rocky Mountain slopes and west Gulf states. Comparison with the averages for past years shows very large percentages of excess in the Rio Grande Valley and southern slope, and quite a marked excess in the middle slope and west Gulf states. In the upper lake region there was a slight excess and in the eastern Canadian provinces there was also a slight, but general, excess over the average rainfall. The rainfall in the lower Rio Grande valley was about three times as great as the average, and that in the southern slope was slightly more than double the average. The most noteworthy feature of the month's rainfall, however, is the extended area of deficiency, which constitutes much the greater part of the United States. In the extreme northwest and in the Atlantic coast states southward of Virginia the rainfall amounted to about one-third of the April average; on the north Pacific coast, in the Missouri and Ohio valleys, and on the Atlantic coast from Virginia northward slightly less than two-thirds of average amount of rain fell; and in Montana, the upper Mississippi valley, and lower lake region the monthly rainfall amounted to about three-fourths of the April average. The most marked deficiency occurred in California, where the normal April rainfall ranges from about 1.60 in the southern part of the state to nearly 3.00 in the northern part; the rainfall in this state for April of the current year has amounted to less than 10 per cent. of the normal.

HAIL.

Hail is reported to have fallen as follows: 1st, Conn., Ill., Mont., N. Y., Ohio, Pa., Wash. 2d, Ala., Ohio, Pa., Tenn. 3d, Cal., Ga., Ill. 4th, Iowa, Minn., Mont., Oregon, Tenn., Wash. 5th, Dak., Ill., Iowa, Mich., Ohio, W. Va., Wis. 6th, Pa., Tenn. 7th, Iowa, Kans. 8th, Ariz., Ill., Iowa, Kans., N. Mex., Tex. 9th, Dak., Ind. T. 10th, N. Mex., Pa. 11th, La., Miss., N. Mex., N. Y., Tex. 12th, Pa., W. Va. 13th, Mich. 14th, W. Va., Wis. 15th, Ill., Ohio, W. Va. 16th, Colo., Minn., Nebr., N. J., W. Va., Wis. 17th, Ala., Colo., Ill., Kans., Mich., Minn., N. Mex., W. Va., Wis. 18th, Ohio, S. C. 19th, Fla., N. C. 20th, N. J. 21st, Ariz., Conn., Mass., R. I., W. Va. 22d, Ala., Conn., Me., Oregon. 23d, Ala., Ariz., Conn., La., N. Mex., Oregon, R. I. 24th, Conn., Oregon. 25th, Cal., Minn., Nebr., Oregon, Wyo. 26th, Colo., Dak., Iowa, Kans., Minn., N. Mex., Wyo. 27th, Idaho, Nebr., N. Mex., Oregon. 28th, Oregon, Tex., Wis. 29th, W. Va., Wis. 30th, Cal., W. Va., Wis.

SNOW.

During the month snow fell on but few dates southward of the fortieth parallel, except in the Rocky Mountain regions and in West Virginia. Northward of the fortieth parallel it fell on numerous dates, increasing gradually from ten days in Wisconsin to twenty-two in Maine. The most southerly stations, with altitudes below 2,000 feet above sea-level, that reported snow are located in New Jersey and southern Pennsylvania, where it occurred on the 16th and 17th.

MONTHLY SNOWFALLS (in inches and tenths).

Monthly snowfalls of five inches, or more, occurred as follows; in states having less than five inches the maximum amount is given:

California: Fort Bidwell, 1. Colorado: Pike's Peak, 23.2; Georgetown, 6. Connecticut: New Hartford and New London, trace. Dakota: Fort Buford, 6.8; Parkston, 6. Illinois: Riley, 3. Iowa: Clear Lake, 1.5. Maine: Cornish, 21; Kent's Hill, 19; Orono, 16; Eastport, 15.8; Bar Harbor, 9; Gardiner, 8.5. Massachusetts: Dudley, 5. Michigan: Marquette, 12.6; Mio

and West Branch, 10; Maple Hill, 9.4; East Tawas, 8.1; Alpena, 7.7; Harrisville and Traverse City, 6.5. Minnesota: Saint Vincent, 3.1. Montana: Fort Maginuis, 6.8. Nebraska: North Loup, 7. Nevada: Carson City, 1.8. New Hampshire: Berlin Mills, 11.5; Concord, 8; Antrim, 7; Manchester, 6.9. New Jersey: Beverly, 1. New Mexico: Santa Fé, 0.5. New York: Humphrey, 7.2; Utica, 5. Ohio: Westerville and North Lewisburg, 1. Pennsylvania: Reading, 8.5; Dyberry, 6.5; Wellsborough, 6. Utah: Salt Lake City, 2.3. Vermont: Strafford, 29; Middlebury, 27.2; Northfield, 14.4; Manchester, 9; Saint Johnsbury, 8; Lunenburg, 7.5. West Virginia: Middlebrook, 3.5. Wisconsin: Fredonia, 4. Wyoming: Fort Bridger, 4.6.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for a series of years; (2) the length of record during which the observations have been taken, and from which the average has been computed; (3) the total precipitation for April, 1888; (4) the departures of the current month from the average; (5) and the extreme monthly precipitation for April during the period of observations and the year of occurrence:

State and station.	County.	(1) Average for the month of April.	(2) Length of record.	(3) Total for April, 1888.	(4) Departure from average.	(5) Extreme monthly precipitation for April.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		Inches	Years	Inches	Inches.	Inches.		Inches.	
Lead Hill	Boone	4.68	7	1.98	-2.70	6.61	1882	1.98	1888
Washington	Hempstead	5.47	20	6.62	+1.15				
California.									
Sacramento	Sacramento	1.98	22	0.10	-1.88	11.97	1880	Trace.	1875
Salinas	Monterey	1.33	16	0.00	-1.33				
Florida.									
Merritt's Island	Brevard	4.22	11	1.69	-2.53	9.74	1878	0.53	1885
Illinois.									
Riley	McHenry	2.70	27	2.16	-0.54				
Sandwich	DeKalb	3.35	38	1.70	-1.65				
Indiana.									
Logansport	Cass	3.15	34	3.33	+0.18	7.30	1864		
Vevay	Switzerland	3.40	21	1.99	-1.50	7.18	1872	0.98	1882
Spiceland	Henry	3.20	28	2.16	-1.04	7.30	1862	0.80	1867
Iowa.									
Independence	Buchanan	2.06	12	2.53	+0.47	4.10	1882	0.70	1879
Cresco	Howard	2.12	15	3.68	+1.56	3.68	1888		
Monticello	Jones	2.56	34	1.50	-1.06	5.78	1862	0.63	1863
Kansas.									
Lawrence	Douglas	3.16	20	2.58	-0.58	5.62	1884	1.08	1870
Wellington	Sumner	3.28	10	6.49	+3.21	6.49	1888	0.54	1880
Independence	Montgomery	3.67	16	6.37	+2.70	6.37	1888	1.64	1885
Louisiana.									
Grand Coteau	Saint Landry	4.88	6	2.68	-2.20	8.03	1886	1.77	1887
Point Pleasant	Tensas	9.73	12	1.75	-7.98				
Maine.									
Gardiner	Kennebec	3.42	50	2.27	-1.15	6.81	1887	0.65	1844
Maryland.									
Cumberland	Alleghany	2.16	16	2.56	+0.40	4.53	1882	0.60	1879
Massachusetts.									
Somerset	Bristol	3.97	18	2.17	-1.80				
Worcester	Worcester	3.58	50	3.23	-0.35				
Michigan.									
Thornville	Lapeer	2.35	12	1.57	-0.78				
Kalamazoo	Kalamazoo	2.63	13	1.07	-1.56				
Adrian	Lenawee	2.78	11	3.31	+0.53				
Nevada.									
Carson City	Ormsby	1.28	9	0.20	-1.08	5.02	1880	0.12	1881
New Jersey.									
South Orange	Essex	2.98	18	4.10	+1.12	7.52	1874	0.85	1881
New York.									
Palermo	Oswego	2.30	35	2.30	0.00	7.00	1859	0.26	1879
Ohio.									
Wauseon	Fulton	2.46	15	2.27	-0.19	4.81	1880	1.31	1872
Oregon.									
Albany	Linn	3.39	10	1.40	-1.99	6.58	1883	1.38	1885
Eola	Polk	3.09	18	0.89	-2.20				
Pennsylvania.									
Dyberry	Wayne	2.46	19	2.98	+0.52	5.06	1874	0.80	1882
Wellsborough	Tioga	3.80	10	2.49	-1.31	5.30	1884	2.10	?
South Carolina.									
Kirkwood	Kershaw	3.08	22	1.26	-1.82			1.05	1872
Stateburg	Sumter	2.53	8	0.83	-1.70	4.17	1883	0.83	1888
Tennessee.									
Milan	Gibson	4.48	6	2.45	-2.03	9.58	1883	1.38	1887
Texas.									
New Ulm	Austin	3.84	16	3.76	-0.08	8.00	1873	0.17	1887
Virginia.									
Bird's Nest	Northampton	3.33	19	4.10	+0.77	6.65	1883	1.10	1869
Wytheville	Wythe	3.49	24	1.35	-2.14	6.50	1862	0.80	1876
Vermont.									
Strafford	Orange	2.37	14	3.00	+0.63	5.20	1878	0.60	1881
West Virginia.									
Helvetia	Randolph	4.01	12	2.61	-1.40				

DEPTH OF UNMELTED SNOW ON GROUND AT END OF MONTH.

[Expressed in inches and tenths.]

Snow on the ground at the close of April was reported as follows: *Dakota*: Parkston, trace. *Maine*: Cornish, 12. *Michigan*: Marquette, 10; Maple Hill, 7; Big Rapids, 3; Alpena, 2.8; Harrisville and West Branch, 2; Bear Lake, 1.5; Alma and Grand Haven, trace. *Minnesota*: Duluth, trace. *Montana*: Virginia City, 0.5. *Vermont*: Strafford, 12; Manchester, trace. *Wisconsin*: Manitowoc and Milwaukee, trace.

SLEET.

Sleet fell during April on the several dates as follows: 1st, Dak., N. Y., Ohio, Pa.; 2d, N. Y.; 3d, Cal.; 8th, Wis.; 10th, Conn., Mass.; 11th, Me.; 13th, Mich., Wis.; 14th, N. Y.; 15th and 16th, Wis.; 17th, Mich., Wis., Wyo.; 18th, Ind., Iowa, Mich.; 19th, Iowa, Ohio; 21st, Me.; 26th, Mont.; 28th, Mich., Minn., N. Mex.; 29th, Dak., Wis.; 30th, Wis.

PRECIPITATION FROM A CLOUDLESS SKY.

Mr. T. C. Harris, voluntary observer, Raleigh, N. C., reports: "On April 3d, 9.30 p. m., a brisk sprinkle of rain (about 0.01 inch) fell from a clear sky; stars were shining brightly at the time; cloud visible low down on the horizon in the west. The phenomenon was noticed by many persons."

EXCESSIVE PRECIPITATION IN APRIL.

Table showing for the month of April monthly rainfalls of 10 inches, or more (in states where monthly rainfalls did not reach 10 inches the station reporting the maximum amount is given); rainfalls of 2.50 inches, or more, in any 24 consecutive hours; and rainfalls equaling or exceeding one inch in one hour.

States and stations.	Rainfall of 10 inches, or more, per month.		Rainfall of 2.50 inches, or more, in 24 hours.			Rainfall equaling or exceeding one inch per hour.			
	Year.	Amt.	Year.	Day.	Amt.	Year.	Day.	Time.	Amt.
<i>Alabama.</i>		<i>Inches.</i>			<i>Inches.</i>			<i>h. m.</i>	<i>Inches.</i>
Carrollton			1887	22	2.88				
Green Springs			1878	23	2.50				
Do.			1880	20	3.82				
Mobile	1874	10.92	1875	1-2	3.39	1872	21	0 40	1.11
Do.			1881	24	5.34	1888	23	1 00	2.60
Do.			1882	19	7.30				
Do.			1883	9	2.59				
Do.			1888	23	2.74				
Montgomery	1876	10.99	1876	2	5.97				
Do.	1877	10.36	1877	7-8	4.65				
Do.			1877	28	3.10				
Do.			1879	16	2.52				
Do.			1882	19	2.71				
Do.			1883	9	3.41				
Do.			1886	25	3.66				
New Market			1888	30	2.63				
<i>Arizona.</i>									
Prescott	1878	2.86							
<i>Arkansas.</i>									
Fort Smith			1885	21-22	4.30	1883	13	1 00	1.45
Do.			1886	25	2.61				
Do.			1888	28	3.40				
Little Rock	1884	10.24	1883	5-6	4.57	1880	19	1 00	1.10
Do.			1884	14	2.99	1882	6	0 30	1.50
Do.			1884	18	2.83	1882	28	0 30	1.03
Do.			1884			1883	5	1 00	1.10
Pine Bluff			1888	10	3.00				
<i>California.</i>									
Foust City			1880	20-21	6.54				
Georgetown			1880	21	4.00				
Grass Valley			1880	20-21	4.50				
Headlandsburg			1880	20-21	9.73				
Modesto			1880	20-21	7.00				
Mount Saint Helena			1880	20-21	14.70				
Nevada City			1880	21	5.20				
Sacramento	1880	14.20	1880	20	5.28				
Do.			1880	21	3.09				
San Francisco	1880	10.06	1880	20-21	6.70				
Santa Rosa			1880	20-21	5.02				
Tombales			1880						
<i>Colorado.</i>									
Denver			1885	22-23	2.77				
Pike's Peak	1879	12.15	1879	13-14	3.28				
Do.			1879	20-21	3.23				
Do.			1885	22-23	3.42				
<i>Connecticut.</i>									
New Haven			1876	3-4	5.90				
Do.			1879	17-18	2.50				
New London	1874	10.85	1876	3-4	4.74				
Southington			1878	29	2.50				
<i>Dakota.</i>									
Deadwood	1878	8.77	1877	16	2.52				
Do.			1878	17	3.20				
Do.			1879	21-22	2.85				
Do.			1880	22-23	3.32				
Fort Sully	1886		1886	24-25	2.74				
Yankton	1875		1875	6-7	4.00				

Table showing for the month of April, &c.—Continued.

States and stations.	Rainfall of 10 inches, or more, per month.		Rainfall of 2.50 inches, or more, in 24 hours.			Rainfall equaling or exceeding one inch per hour.			
	Year.	Amt.	Year.	Day.	Amt.	Year.	Day.	Time.	Amt.
<i>Delaware.</i>		<i>Inches.</i>			<i>Inches.</i>			<i>h. m.</i>	<i>Inches.</i>
Cape Henlopen	1887	2.63							
<i>District of Columbia.</i>									
Washington City	1874	5.65							
<i>Florida.</i>									
Cedar Keys			1878	24	3.79				
Daytona						1879	9	1 00	1.70
Do.			1880	29	0 45				1.02
Fort Barrancas	1874	10.11	1878	8	2.75				
Do.	1879	14.28	1878	23	3.48				
Do.			1879	14	3.05				
Do.			1880	16	2.24				
Do.			1885	2-3	4.32				
Do.			1885	7-8	3.63				
Jacksonville	1876		1876	2-3	4.70	1881	23	1 10	1.07
Do.						1883	23	0 20	*1.50
Key West			1882	3-4	3.23				
Pensacola			1880	16	2.30				
Do.			1881	24	2.73				
Do.			1885	8	2.69				
Do.			1886	18	2.84				
Saint Marks	1878		1878	15	3.60				
Do.			1879	14-15	5.15				
Titusville						1888	19	0 25	1.78
<i>Georgia.</i>									
Atlanta			1883	9	3.08	1883	23	1 00	1.44
Do.			1884	14-15	3.76				
Augusta			1874	16-17	2.74				
Do.			1876	1-2	2.82				
Do.			1877	12-13	2.91				
Do.			1882	22-23	3.26				
Do.			1883	9-10	2.66				
Do.			1883	23	2.53				
Savannah	1877	8.82	1873	29	2.98				
Do.			1876	1-2	2.63				
Do.			1877	12-13	2.52				
Do.			1878	9	3.12				
Do.			1879	16-17	6.11				
Do.			1883	30	3.21				
Tybee Island			1878	9	4.36				
<i>Idaho.</i>									
Eagle Rock	1882	3.35							
<i>Illinois.</i>									
Cairo	1874	7.57	1872	13	2.50				
Griggsville			1883	22	3.20				
Hennepin			1878	28	2.60				
Mount Sterling			1878	19	3.00	1878	19	2 00	3.00
Peoria						1873	5	1 05	1.13
<i>Indiana.</i>									
Blue Lick			1887	22	3.36				
Indianapolis	1880	6.43	1888	9-10	2.00				
Marengo			1887	22	6.77				
New Corydon			1880	23	3.79				
Vevay			1878	10	2.80				
Do.			1880	25	2.20				
Do.			1887	22	3.67				
<i>Indian Territory.</i>									
Eufaula			1888	28	3.80				
Fort Arbuckle			1860	20	0.00				
Do.			1870	26	3.03				
Fort Gibson	1875	8.74	1875	30	4.67				
Fort Sill			1879	21-22	6.46				
Tulsa			1888	28	3.20				
Woodward			1888	8	3.04				
<i>Iowa.</i>									
Bancroft			1888	26-27	2.82				
Davenport			1876	11-12	3.32				
Denmark						1882	8	0 30	1.87
Dubuque			1882	18-19	2.60				
Keokuk	1873	5.65							
Newton			1880	23	3.90				
Smithland			1878	9	2.60				
Sac City			1888	26-27	3.44				
West Bend			1888	4-5	3.00				
<i>Kansas.</i>									
Baxter Springs			1878	22	3.10				
Empire City			1878	22	2.75				
Grainfield			1888	27	5.00				
Independence			1888	8	2.70				
Leavenworth			1877	18-19	3.16				
McAllaster	1888	10.20	1888	26	4.00				
Do.			1888	27	3.40				
Do.			1888	28	3.50				
Manhattan						1885	20	1 00	1.23
Oakley			1888	27-28	3.00				
Tribune			1888	26-27	3.50				
Wellington			1888	8	3.50				
<i>Kentucky.</i>									
Louisville	1872	9.08	1872	8	3.56				
Do.			1880	15	2.28				
Do.			1883	5-6	3.64				
Do.			1887	17-18	2.60				
Do.			1887	22	2.66				
Shelbyville			1888	9	2.70				
<i>Louisiana.</i>									
New Orleans	1874	13.62	1875	20-21	2.90	1879	16	2 20	2.82
Do.	1883	14.20	1870	7	5.51				
Do.			1879	16	2.82				
Do.			1880	20	3.18				
Do.			1883	7-8	9.22				
Do.			1884	4-5	2.96				
Do.			1886	27-28	2.67				

Table showing for the month of April, &c.—Continued.

States and stations.	Rainfall of 10 inches, or more, per month.		Rainfall of 2.50 inches or more, in 24 hours.			Rainfall equaling or exceeding one inch per hour.			
	Year.	Amt.	Year.	Day.	Amt.	Year.	Day.	Time.	Amt.
Louisiana—Continued.		Inches.			Inches.			h. m.	Inches.
Okaloosa	1879	16	2.60						
Point Pleasant	1880	8	3.01						
Do.	1880	15	4.01						
Do.	1885	2	6.02						
Do.	1885	5	12.28						
Shreveport	1874	10.64	1878	15	2.92				
Do.	1879	10.23	1879	15	4.64				
Do.	1879	23	3.11						
Do.	1885	22	3.50						
Maine.									
Eastport	1884	6.83							
Portland	1884	15-16	3.60						
Maryland.									
Baltimore	1874	6.65							
Massachusetts.									
Thatcher's Island	1880	4	2.66						
Wood's Holl	1874	9.32							
Michigan.									
Adrian						1888	5	0 10	*1.50
Grand Haven	1880	6.48							
Grand Rapids	1878	24	2.61						
Minnesota.									
Breckenridge	1878	7.77	1878	10-11	5.12				
Fort Snelling	1888	26	2.71						
Mississippi.									
Brook Haven	1876	20.35	1874	8	3.30				
Do.	1877	12.00	1874	15-16	4.40				
Do.	1874	17-19	7.45						
Do.	1875	8-9	3.80						
Do.	1876	1	3.20						
Do.	1877	27	3.40						
Coleman.	1874	19.60							
Fayette.	1874	14.20	1874	3	2.60				
Do.	1877	10.30	1874	7	3.50				
Do.	1880	13.00	1878	8	2.50				
Do.			1878	23	2.70				
Do.			1880	15-16	9.00				
Grenada	1874	18.50	1869	19	2.60				
Jackson	1874	23.80							
Ship Island			1868	6	2.50				
Do.			1866	17-18	3.80				
Vicksburg	1868	13.01	1868	6	3.00	1874	15	3 45	3.40
Do.			1869	25	2.60				
Do.			1869	27	2.70				
Do.			1872	2-3	2.61				
Do.			1872	5-6	3.33				
Do.			1874	8	4.46				
Do.			1874	15	4.18				
Do.			1874	18-19	4.86				
Do.			1875	9-10	2.63				
Do.			1877	7-8	3.53				
Do.			1878	23	2.63				
Do.			1880	8	3.09				
Do.			1883	6	4.25				
Do.			1885	6-7	4.29				
Do.			1886	27-28	2.79				
Missouri.									
Saint Louis	1873	6.87	1850	16	2.53				
Do.			1856	26	3.84				
Do.			1868	14	3.42				
Do.			1873	7-8	3.15				
Do.			1878	22-23	3.88				
Do.			1881	6-7	2.62				
Montana.									
Fort Ellis			1879	20-21	2.60				
Virginia City	1880	3.87							
Nebraska.									
North Platte			1875	28	2.74				
Omaha	1885	6.34	1883	17	2.55	1883	14	1 00	1.00
Nevada.									
Winnemucca	1887	1.94							
New Hampshire.									
Mount Washington	1878	23.41							
Do.	1882	11.20							
New Jersey.									
Lambertville			1863	15-16	2.60				
Long Branch	1874	11.37							
Sandy Hook	1874	12.55							
New Mexico.									
Santa Fé	1877	1.83							
New York.									
New York City	1874	7.02	1886	5-6	3.72				
North Carolina.									
Cape Lookout	1877	10.65							
Charlotte			1884	21-22	2.04	1885	5	0 35	1.00
Ellsworth			1880	4	2.50				
Do.			1880	29	3.50				
Fayetteville			1879	27-28	6.25				
Greenville			1878	11	3.00				
Hatteras	1877	11.07	1875	3	4.62	1877	8	1 00	1.00
Do.			1877	13-14	3.75	1877	13	1 00	1.00
Do.			1878	10	2.83				
Do.			1881	14	4.53				
Do.			1883	23	3.00				
Do.			1878	9	3.00				
Do.			1880	29	2.60				
Mount Pleasant			1888	18-19	2.61				
Murphy	1883	13.16	1876	13-14	4.30				
Portsmouth			1877	13	2.64				
Wilmington									

Table showing for the month of April, &c.—Continued.

States and stations.	Rainfall of 10 inches, or more, per month.		Rainfall of 2.50 inches, or more, in 24 hours.			Rainfall equaling or exceeding one inch per hour.			
	Year.	Amt.	Year.	Day.	Amt.	Year.	Day.	Time.	Amt.
<i>Ohio.</i>		<i>Inches.</i>			<i>Inches</i>			<i>h. m.</i>	<i>Inches</i>
Cincinnati	1887	5.86							
North Lewisburg			1880	23	3.10				
Portsmouth			1840	29	2.90				
<i>Oregon.</i>									
Portland	1883	7.88							
<i>Pennsylvania.</i>									
Newtown			1840	12	3.78				
Do.			1840	29	3.28				
Philadelphia	1874	9.76							
Pittsburg			1887	28-29	2.56	1886	26	0 34	1.50
Do.						1887	28	1 00	1.00
<i>Rhode Island.</i>									
Newport	1878	6.87							
Fort Adams			1863	16-17	4.00				
<i>South Carolina.</i>									
Aiken			1879	16	3.60				
Charleston			1878	9	5.26	1875	11	1 00	1.24
Do.			1879	16-17	5.09				
<i>Tennessee.</i>									
Chattanooga	1880	10.37	1880	3	3.09				
Do.			1882	22-23	3.01				
Do.			1883	22-23	2.55				
Do.			1884	14-15	2.62				
Do.			1887	22	2.36				
Knoxville			1874	15-16	4.23	1871	19	1 00	1.10
Do.			1883	22	3.03	1883	22	1 00	1.00
Do.			1886	4-5	2.90				
McMinnville			1878	23	2.60				
Memphis	1874	10.16	1872	8	2.95	1880	19	1 00	1.00
Do.	1878	11.93	1873	30	2.72				
Do.			1874	15	3.60				
Do.			1877	1	2.59				
Do.			1877	17-18	2.59				
Do.			1877	26-27	3.35				
Do.			1878	23	3.98				
Do.			1884	13-14	3.02				
Nashville	1874	11.84	1872	8	3.45				
Do.			1878	23	2.95				
Do.			1883	21-22	5.04				
Do.			1888	9	3.13				
Parksville			1887	22	2.47				
<i>Texas.</i>									
Austin			1879	22-23	4.40				
Clarksville	1877	10.25	1879	22-23	5.50				
Comanche			1888	25	2.50				
Corsicana	1879	11.50	1879	22	6.31	1879	22	4 00	6.31
Do.			1879	23	3.31				
Do.			1880	7	2.79				
Dallas			1888	27	5.00				
Fort Elliott			1888	28	2.60	1885	20	1 00	1.08
Gallinas			1872	2	3.25	1875	29	1 00	1.38
Galveston			1877	25	2.66				
Do.			1878	8	3.27				
Do.			1881	25-26	3.20				
Do.			1884	4-5	2.53				
Do.			1885	22-23	2.68				
Hearne			1888	29	3.50				
Indianola			1878	7	2.73				
Longview			1888	29	3.40				
Melissa	1879	10.09	1876	7	3.00				
Do.			1877	17	5.00				
Do.			1879	22-23	8.00				
New Ulm			1879	23-24	5.12				
Palestine			1884	18-19	3.01	1888	28	1 00	1.12
Do.			1888	28-29	4.45				
Pilot Point			1879	28	3.00	1879	28	0 45	3.00
Rio Grande City						1881	30	0 55	1.24
San Antonio			1880	28	2.79	1885	22	1 00	1.00
Do.			1888	18	2.50				
Santa Maria			1888	19-20	7.34				
Sour Lake			1888	24	2.75				
Terrell	1879	19.75							
Weatherford			1888	27-28	5.00				
<i>Utah.</i>									
Salt Lake City	1886	4.43							
<i>Vermont.</i>									
Burlington	1874	3.19							
<i>Virginia.</i>									
Cape Henry			1878	4	2.53				
Do.			1878	25	2.50				
Norfolk	1877	9.98	1877	9-10	4.63				
Do.			1883	16-17	5.19				
<i>Washington.</i>									
Olympia	1883	10.78							
<i>West Virginia.</i>									
Morgantown	1874	7.20							
<i>Wisconsin.</i>									
Milwaukee	1877	6.99							
Wautoma			1878	21	3.00				
<i>Wyoming.</i>									
Hat Creek	1879	6.93	1879	21-23	6.74				

(where this month has been nearly free from such rainfalls), practically the same as those in which excessive rainfalls have occurred in preceding months, discussions of which have been given in the MONTHLY WEATHER REVIEW. It appears, however, that monthly rainfalls of ten inches, or more, have been less frequent in April than in March, especially on the north Pacific coast, where the April records show but one instance of a monthly rainfall amounting to as much as 10 inches, viz., 10.78 at Olympia, Wash., in 1883, and while this limit has not been reached on the central Pacific coast in March, it has been exceeded in April (1880) at both San Francisco and Sacramento, the latter station reporting 14.20. The records of but three stations show April rainfalls in excess of 20 inches, as follows: Brookhaven, Miss., 20.35, in 1874; on the summit of Mount Washington, N. H., 23.41, in 1878; and Jackson, Miss., 23.80, in 1876.

Daily rainfalls in April of 2.50 inches, or more, appear to have occurred with more frequency and over a larger extent of country than in the previous month. This statement, however, does not apply to the east Gulf coast, where they were more frequent at some stations in March than in April. At Vicksburg, Miss., daily rainfalls in April reaching the amount stated have been recorded fifteen times during the past twenty-one years; but of these two occurred in 1869, two in 1872, and three in 1874, there being ten years in which they did not occur. At Galveston, Tex., where the March records gave but

one such daily rainfall those for April show six. At Louisville, Ky., the records show five daily rainfalls under this heading for April, while none have occurred at that station in March, and at Saint Louis, Mo., where but two occurred in March six have occurred in April. Remarkably heavy rains fell in portions of central California, April 20-21, 1880, and during the storm on the dates mentioned measurements of from three to fourteen inches were made at a number of stations, but in no other year do the records show similar rainfalls for that region. The largest amount given for any one day is that reported from Point Pleasant, La., viz., 12.28 inches for April 5, 1885.

As in the months previously considered hourly rainfalls amounting to, or exceeding, one inch have seldom occurred, and the stations reporting same are generally widely separated, being confined for the most part to the Southern States. Since the Signal Office at Little Rock was established, in 1880, four measurements of hourly rainfall in excess of 1.00 inch have been recorded, and of these two occurred in 1882; this station shows the maximum number, notwithstanding that the records at many other stations in the South are twice as long. It would, therefore, seem that these excessive rainfalls occur in the vicinity of Little Rock with uncommon frequency in April.

From the data at hand it appears that the fall of 3.00 in forty-five minutes at Pilot Point, Tex., on April 28, 1879, is the maximum rate that has ever occurred in this month.

WINDS.

The most frequent directions of the wind during April, 1888, are shown on chart ii by arrows flying with the wind. They were generally northeasterly in the upper Mississippi valley, Lake region, New England, and middle Atlantic states; southerly in the west Gulf states; and variable in other districts.

HIGH WINDS (in miles per hour).

No maximum velocities of fifty or miles per hour, other than those given in the table of miscellaneous meteorological data, have been reported.

LOCAL STORMS.

Waterville, Le Seuer Co., Minn.: severe local storms occurred to the northward of this place on the afternoon of the 4th. A large amount of damage was done at Faribault, about fifteen miles northeast of Waterville.

Clarksville, Greene Co., Pa.: the storm during the evening of the 5th was unusually violent, and caused extensive damage in this section.

Sharpsville, Mercer Co., Pa.: the storm of the 5-6th was of unusual severity, and caused considerable damage here and at Mercer, Sharon, and West Middlesex in this county.

Sewickley, Alleghany Co., Pa.: a severe hail storm occurred here about 4 p. m. on the 5th. Numerous windows were broken by the hail-stones. At Coraopolis, in this county, the storm is reported to have been unusually severe.

Perrysburg, Wood Co., Ohio: a severe storm, apparently a tornado, passed south of, and near, here shortly before dark on the 5th, its path being about two miles in length and one hundred yards in width.

Lima, Allen Co., Ohio: the storm of the night of the 5-6th unroofed buildings at this place, and blew down many derricks in the oil fields in Allen, Wood, and Hancock counties.

Connersville, Fayette Co., Ind.: many dwellings and barns were unroofed by a severe storm which passed in a southwesterly direction through this county between 7 and 8 p. m. on the 5th, its path being about eighty rods wide.

Delphi, Carroll Co., Ind.: a violent wind and rain storm occurred here between 5 and 6 p. m. on the 5th. At Sleeth, a small village northwest of here, two houses are reported to have been completely demolished and a train of freight cars

was blown from the track. At Delphi 0.71 inch of rain fell in forty minutes.

Cunningham, Carlisle Co., Ky.: in this vicinity outbuildings, fences, etc., were blown down and some dwellings unroofed by the storm which occurred at 10 p. m. on the 5th.

Mauzy, Rush Co., Ind.: at about 7.20 p. m. on the 5th a tornado formed directly south of this place, distant about three miles, and moved eastward, unroofing buildings and demolishing outhouses. A large amount of damage was done to orchards and forests. The storm was accompanied by hail.

Muskegon, Muskegon Co., Mich.: a rain and hail storm passed over this place during the early morning of the 5th, the hail causing considerable damage to windows and skylights.

Sioux City, Woodbury Co., Iowa: during a severe thunderstorm on the 5th a tornado cloud passed over this city from southwest to northeast; it struck the ground in but one place, where it destroyed a house, then rebounded and moved onward over the western suburbs.

Glenwood, Rush Co., Ind.: a severe local storm passed two miles south of here during the night of the 5-6th, unroofing buildings and causing other damage.

Nashville, Tenn.: very heavy rain fell from 2.30 to 2.45 p. m. on the 9th; from 7.23 to 7.28 the wind blew at the rate of fifty-two miles per hour. Trees, awnings, etc., were blown down by the high wind, and the heavy rainfall flooded cellars and washed out culverts.

Vineyard Haven, Mass.: during the southeasterly gale on the night of the 11-12th a number of vessels in this harbor dragged anchor and some sustained damage.

Charlotte, N. C.: during a thunder-storm on the afternoon of the 19th there was a heavy fall of hail at 6.10 o'clock; some of the hail-stones, which were of irregular form, measured three-fourths of an inch in length. The storm is reported to have been very severe to the east of the city.

Titusville, Fla.: a severe storm, moving from northwest to southeast, and attended by high wind, heavy rain, and hail, occurred on the 19th between 4.23 and 4.48 p. m., during which time 1.62 inches of rain fell. Several boats on the river were capsized and some old buildings blown down. The orange crop sustained serious injury in sections where the fall of hail was heaviest, but fortunately the path of the storm was nar-